

AVIATION WEEK

MARCH 8, 1948

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This new General Electric capacitance gas-gage system, which indicates pounds of fuel, now makes possible more accurate and reliable fuel quantity indication under all conditions. The system is so designed that the operation and accuracy of indication can be checked at any time during flight.

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Northwest's Martin 2-0-2's fly with Sperry Gyroplane.*

Northwest Airlines has joined the many leading airlines that bring to their passengers the additional comfort and safety provided by automatic flight. The work, however, Martin 2-0-2's that fly Northwest's "Overland Route" from coast-to-coast are now equipped with the Sperry A-11 Gyroplane to help the pilot do his job better.

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Profits Don't Pay?

Crucial in the doubtful air transport picture is a substantial money-maker in 1945 and 1947. Eastern Air Lines is to be penalized by recent CAB decisions. The carrier claims routes granted PCA and Delta in the Boston-New Orleans case and wants to National in the Middle Atlantic case. Eastern again \$100,000,000 of EAL traffic to discontinue annually.

Should CAB adopt its recent economic's recommendations that Pan American be given a New York-Miami route, Eastern again will be the principal loser.

Many observers believe the Board's two-to-one decision against outfitting Go-mat for a New York-Washington route was a crushing blow to that line's efforts to become independent of heavy mail subsidy.

Naval-Air Force Transfers

Legislation enabling Naval Air officers to transfer to USAF can be expected in the summer of Congress. It will touch off a new inter-service war.

In a hot remote action, Congressional Air Policy Board struck out a recommendation for legislation authorizing personnel transfers between the Navy and the Air Force and Army Transfers can now be made between the Air Force and Army.

Since Board members, however, feel that USAF now suffers from a dearth of experienced high-ranking officers in the 45-53 age bracket while the Navy has a substantial supply of such officers.

Administrators Scare

Threats of major agencies for overall research planning and coordination are stressed by the anxiety of qualified research administrators to head such agencies.

As a result of this shortage, it has proved impossible so far to form an overall supervisory body, national or even within the members of which do not serve on other boards panels or committees or are not officers of an agency subordinate to such an overall agency. For example, Dr. Vincent Bush, Dr. Jerome C. Brundage, and Dr. Hugh Dryden serve on a total of nine advisory and 14 other committees in the general research field.

Air Force and Naval Aviation officials expand this list to almost 50.

Thus, a chronic overabundance is often inseparable when a given administrator sits on a board which is theory

War in Speech & Paper

Air Force generals have been scoring victory public gatherings usually with fine predictions of a one-night air blitz preview of the next war. Latest was Maj. Gen. Orville Anderson, commander of the Air Force Tactical School, who told the U. S. Conference of Mayors that the next war might be settled in a single night.

At the War College in Washington the Reds and the Blues representing the United States and Russia have been fighting the next war on their large scale maneuvers boards for three months with neither side yet close enough to the other's vital targets to be able to hit them with 25 atom bombs.

detests his administration. Most observers, paradoxically, believe that situation the most effective assurance of the preservation of duplication and coordination of the research effort of the nation.

Proague Link Weakens

Watch for the State Department to cancel U. S. bilateral air agreement with Czechoslovakia. If the Department gets to taking action, Congressmen who have long been wary that Russia would use a similar action to obtain operating rights in the U. S. without giving U. S. reciprocal rights in Russia will bring pressure. Cancellation of the bilateral would affect Pan American, which has continued operations into Prague since the political coup which brought Czechoslovakia under Moscow domination.

Planning Legislation

Although the Congressional Air Policy Board officially opened March 1, members continue to work together on legislation to implement the Board's recommendations. Plans of Sen. Owen Brewster who served as board chairman, to promote Congressional action on was controversial aviation legislation.

Regal action by Senate and House Interstate and Foreign Commerce Committees on Board proposed civil aviation bill is expected, since both committees were well represented on the Board. All five Senate members of the

Board were from Senate late in the case of the five House members on House Interstate.

More CAB Names

Former Democratic Sen. Hugh Mitchell at Washington has told friends in the Senate that President Truman offered him the CAB chairmanship, but he turned it down.

Rep. Adlai H. B. Miller, who served as director of the Congressional Air Policy Board, is currently being mentioned among others as a board possibility.

CAB Executive Tom Wooten has the support of minority leader Sam Rayburn for a board post.

Who'll Win the Marines?

For those disparaging inter-service problems and conflicting under the Unification Act, the law has actually increased the number and intensity of these two since all three services have moved under a single test.

In addition to the long and bitter war lately fought Air Force-Navy now over who shall be charged with strategic bombing and command of land-based planes, the Army and Navy are now fighting for control of the Marines.

Attempts to limit out the differences between President Truman's Executive Order on unification and the Congressional act, which are at the cost of many new disputes have been suitably unsuccessful.

NAL Strike Tension

The National Airlines will not be probably ending the Air Line Pilots Association will over \$10,000 a week in benefits to air carriers. Association's is ALPA, against pilots employed by other airlines will keep the union war chest full for the time being. But if the strike drags on grinding against the law it may be an utterance in the strike for economic the failure in the TWA and American Overseas Airlines will not. Public consciousness on the issues of the dispute are being nurtured by strong behind-the-scenes personal attacks on the two main personalities in charge—ALPA President David L. Belandier and NAL President G. T. Baker. Hope is high in some quarters of the air transport industry that a wedge can be driven between the ALPA members and Belandier as the ground that the union chief can the strike weapon successfully.

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The dependability and performance of these VHF communications and navigation systems spells increased safety in flight, more efficient aircraft operation. Specify A.R.C. for your next installation.



NEWS DIGEST

DOMESTIC

Boeing Stratocruiser completed nine flights of 23 hr. in its CAA certification program under the direction of A. M. Alcorn, CAA type certification board vice chairman. It had Boeing B 50 completed 100 hr. of flight testing under Air Force direction.

Registered civil aircraft of the U. S. increased 13,519 during 1947 to a new high total of 94,521 of all types. Civil license tendancy to hold this, but with 10,221 aircraft registered in that state.

Western Central Airlines has become the 10th licensee to transport certificated passengers. First service, with four Lockheed Electra 10 plane transports, was established between 10 cities in Wisconsin, Illinois and Minnesota.

Trans Caribbean Air Cargo Lines, New York, has been fined \$4,500 in Federal Court for carrying passengers to foreign ports in violation of the Civil Aeronautics Act.

FINANCIAL

Boeing Corp. Inc. reports net loss for 1947 of \$68,315 after giving effect to \$300,000 issuance of 1 cent stock. This compares with a 1946 net loss of \$320,397 after \$2,100,000 tax credit. Sales for 1947 totaled \$7,233,971 compared to \$2,735,048 for 1946.

Solar Aircraft Co. reports net profit of \$194,817 for six months ended Jan. 31 on net sales totaling \$18,413,687. This is the equivalent of 51.01¢ a share on 472,059 common shares. Net profit for six months ended Oct. 31, 1947 was \$395,147 or 79 cents a share.

Stewart-Warner Corp. declared cash dividend of 25 cents per share on \$5 per value common stock payable April 10, 1948, to holders of record March 11, 1948.

FOREIGN

Australian National Airways has applied for rights to operate two routes between Sydney, Australia and London, England via the United States. One proposed link is from Sydney to San Francisco, New York, Newfoundland, Ireland and London; the other from Sydney to San Francisco, Mexico City, Havana, Bermuda, the Azores and London.

U. S. and Great Britain have signed an agreement opening to commercial aircraft seven Air Lines in bases on British territory in the Caribbean and Bermuda.



Mr. W. W. Dwyer's position as Director of Engineering for United Air Lines means time is back at aircraft with a pointed nose.

"When United buys a new type, of course we check design, construction and all of the rest."

"But we go even further. We ask, 'How much money can this airplane save us? How does payload compare with operating cost?' The rest, with us, is a matter of dollars and cents."

"That's why we're always glad to see 'Honeycomb' used. Because it saves weight. And every pound of dead weight added shows up on the black side of the operating ledger."

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CAA Budget of \$149,370,000 Is Approved By House Committee

Rep. Karl Stefan credited with more lenient attitude of appropriations group toward CAA; air safety funds survive. New budget is record.

A record budget for the Civil Aeronautics Administration for the coming year, totaling \$149,370,000, was approved last week by the House Appropriations Committee. This represents a boost of \$40,645,666 over CAA's current budget of \$108,724,334.

The House bill slashed the President's estimate for the agency, by over \$65,000,000—was unexpected but welcomed by aviation circles. It is due largely to Rep. Karl Stefan (R., Neb.), chairman of the Appropriations Committee's Commerce Department Subcommittee.

As a member of the Joint Congressional Air Policy Board Stefan played an important role in the drafting of civil aviation and road law appropriations committee paid to improve the Board's recommendations for a vigorous civil aviation program as a part of national defense.

CAA budget—\$149,370,000 budget for the Civil Aeronautics Board was

recommended by the committee. This is \$113,000 above CAA's current-year appropriation, but \$208,000 below the President's estimate. A proviso limits the salary of the CAB chairman from the present \$30,000 a year to \$12,000.

Expressing appreciation over CAA's previous budget at least, the committee pointed to CAB Member Harold E. Board's report that the real rate cases pending before the board involve over \$23,000,000 and the pending certificate cases represent two years' work at CAA's present staff. Over the past eight years, the committee reported, CAB has requested a cumulative total of \$79,948,928 in appropriations. Budget Bureau cuts in CAB requests over the period, it was said, total \$1,112,716, and Congress' cuts, only \$230,659.

► **Then CAA Budget**—"It can hardly be seen that action of the Congress in cutting appropriations for the Board is not the cause of the present situation

lacking of over two years' work", the committee concluded. "The cause, it appears, is lack of a long-term survey pattern, lack of administrative foresight, and confusion . . . CAB must set its own house in order."

The committee did trim \$6,200,000 from the \$155,570,000 requested by the President for CAA. Of the cut, \$5,000,000 was for administrative personnel which, the committee pointed out, either could not be increased or which were deemed superfluous. \$200,000 was for technical development considered unnecessary, and \$1,000,000 for an experimental traffic-forecasting system.

Details on CAA's coming-year budget:

• **Salaries and Expenses**, \$81,451,000.—This amount, approved by the committee, is \$1,000,000 below the budget estimate of \$82,451,000, but \$9,450,232 over the current-year allocation of \$72,999,768. The major activity which would be affected is the operation of the Federal airport system. CAA plans call for stepping up the program from the \$16,970,000 allocated to it this year to \$47,737,768, increasing personnel from 90,396 to 12,845. The committee pointed out CAA has received only 99.75 of the \$8,990 called for in its current year program and expressed doubt that it would be able to attract the additional personnel next year.

The committee specifically cut out



JET BUZZ JOB AT NUDOC

North American's prototype X-45, four jet boosters, handles down the runway only a few feet off the ground in a quickside buzz job at better than 500 mph. Purpose of the low level run

was speed calibration test at USAF Muroc desert test center. X-45A's are in production at North American's Long Beach, Calif., plant.

\$500,000 added for business management purposes, continuing CAA's dual function of administrative activities as headquarters and field offices. This would reduce the agency's business management budget from \$4,900,747 recommended by the President to \$4,401,742.

Highlighting the importance of an safety-oriented, the committee directed CAA not to apply for increases in its \$500,000,000 cut in the \$1,181,155 to be questioned for cutback of safety programs. While applauding the agency for expanding its design system from 4000 to approximately 10,000 designs in the past year, the committee called for an even greater extension of the system and the shifting of responsibility for safety on private industry. "Still greater responsibility should be placed on the manufacturers, who as a percentage must have CAA's attention in the quality of its products."

The committee advocated its position that traffic control tower operations should be financed by other but approved the \$7,590,335 recommended for CAA operations in the previous 150 towns plus 15 additional proposed for the coming year program. It explained that refusal to grant the funds would hinder the program. The committee called on CAA, however, to keep out a

long-range plan looking to local financing.

A fleet of 95 aircraft CAA proposed to operate—composed with its present fleet of 231—was refused to 85 by the committee. The Administration's plan to test planes from unaffiliated sources was enthusiastically approved. For this purpose, \$99,000 was allocated.

- **Establishment of Air Navigation Facilities.** \$24,899,000. Two months of \$20,899,000 each and \$12,900,000 contract industry. The total approach a total of \$10,949,914 over CAA's contract authority of \$11,140,000, and a net reduction of \$1,000,000 in the President's request of \$12,000,000. The President requested an aircraft allocation but the committee recommended that \$12,000,000 take the form of a contract authority. After CAA officials estimated that only \$5,400,000 actually would be expended on the air navigation facilities program planned for the coming year, The \$10,000,000 was for the self-industry system which the committee reported "will be the representative stage" and suggested that "improvement should be made by the manufacturers, who expect to derive profits from the sale of their products to the government."

- **Totalled Development.** \$1,800,000.—This a \$200,000 below the President's

request, but \$200,000 above CAA's current-year appropriation. In cutting the item, the committee explained many of the research program which the Administration has been engaged in in the past has a period of not too great significance.

- **Acquire.** \$48,000,000.—This comprises \$1,000,000 each and \$37,000,000 contract authority. This is the amount proposed by the President and an increase of \$7,500,000 over the actual year appropriation. After being forced out of the total of \$77,100,000 appropriated for airports to date, only \$2,687,738 actually has been expended so far, an additional \$24,917,864 obligated. The committee voted for the contract authority of \$37,000,000. The \$3,000,000 can provide would give the Administration working funds for administrative activities.

- **Washington Airport.** \$8,000,000.—This is the amount recommended by the President and an increase of \$1,917,500 over the \$1,182,500 allocated for current year. Of the total, \$1,165,000 is for operation and \$1,815,000 for construction, including an addition to the terminal building. The committee voted the new increase at airport from \$995,000 in 1945 to an estimated \$1,865,000 in the current fiscal year.

industry technicians and the three NACA laboratories mainly concerning their specialized problems and up to 53 industry or military representatives on committees on data in the NACA research facilities to construction of specific design problems.

- **HQs, Staff, Personnel.**—Dr. Dryden points out that high speed aerodynamics will continue to occupy the major attention of the NACA laboratory staff because of the current need for such information in the design of new jet engines and Navy fighter planes. This need is not confined to basic research. About 10-15 percent of the current total NACA effort is applied research in specific high speed design problems. Whereas the work by NACA is about 50-60 percent of its entire effort was applied research on military aircraft and engines) represented criticism by industry. Dr. Dryden said that the current ratio of applied to basic research is about the same with which the NACA can keep itself informed on industry needs and maintain a realistic approach to its broad research tasks.

- **Design.**—No Stages.—Dr. Dryden is highly critical to the NACA's high speed aerodynamic research, being one of the points in investigation of the aerodynamic characteristics of aircraft at speeds approaching sound.

Following his graduation from Johns Hopkins University, Dryden joined the National Bureau of Standards in the summer of 1915 as an assistant of numerous papers. He received his undergraduate studies at the Bureau under the late Dr. Joseph S. Ames, then professor at Johns Hopkins and chairman of the NACA executive committee (NACA's Ames Laboratory, Moffett Field, Calif. was named after Dr. Ames). The Ames took special interest in Dryden and guided him into aerodynamic research work, following the American Dryden was assigned to the wind tunnel division of the Bureau of Standards in 1920 and began pioneering work in the development of high speed.

In 1923 the General Electric Co. at Lynn, Mass. produced for a North Atlantic eastward a large hollow-dielectric dielectric constant composite capable of delivering 50,000 e.v. of energy per unit of a pressure up to 15 lb per sq in. Meeting of the Dryden Dr. Lyman J. Briggs and Lucius C. Dryden, F. H. Phillips, Chairman, Dept. U.S.A., made arrangements for the first to achieve this result for wind tests during the routine trials of the composite used in delivery.

- **Angus F. Briggs.**—Because the situation was observed to be the subject of the composite used during routine composite tests the wind tunnel and simply from experience to release and frequently contained hydrogen and small shrapnel. Trip to Lynn followed an airplane accident and led to the (including a hurried summons on Christmas Eve, 1923 which took Dryden away from home for Christmas) left the work continued and resulted in NACA Report No. 77 which indicated at this early date the new willingness to let it increase to doing and shift of the center of gravity towards the trailing edge of an airfoil at Mach number 0.5-0.9.

Dryden's work with Briggs continued until 1928 and produced much of the basic data on which modern high speed aerodynamic research is based.

- **Boundary Layer Research.**—It was during 1925 that Dryden began research on boundary layer turbulence, a subject in which he has made outstanding scientific contributions and for which he has received many honors and awards. Through the use of a hot-wire anemometer a hot platinum wire in which a variation in current produces a variation in resistance and therefore a drop in voltage across the wire Dryden and his associates at the Bureau of Standards developed a study of the turbulent theory of boundary layers and their significance in aerodynamic research.

In 1934 Dryden was named director of the Division of Mechanics and Sound and subsequently Assistant Director and



ELECTRICITY GRACE IN THE AIR

Inventive interest in the "hidden" nature of the ground on safety supplied by this light view jumping on base cleaners and security. On that light platform lies the laboratory control 13,590 gal. fuel, 1178 gal oil and 12,775 gal waste fuel. These base light tested aircraft engines and ground base cleanings. The light right scheduled aircraft in test program. Cleanest flight area expected to be completed late summer after 100 air tests and \$1,000,000 just raised over to Air Force. Studies here been completed for installation of quadcoiled testing gear, used on B-35 to expand landing facilities at NACA.

Associate Director of the Bureau of Standards. During this period he served as vice chairman of the NACA Committee on Aerodynamic Research, chairman of the High-Speed Aerodynamic Research Committee on Self-propelled Cooled Engines and member Committee on Jet Propulsion.

- **Dryden Ret.**—With the outbreak of war, Dryden was named consultant to the National Defense Research Council and began research on guided missiles which led to the NDRC-Dryden "plan," a role guided glide-bomb which passed to be the first U.S. guided missile to be used in combat in World War II. Dryden directed the research effort of a team of Bureau of Standards, Navy Department and Radiation Laboratory personnel.

Final result of his research was the famous "Coke," which would maintain lift during the Okinawa campaign on Japanese shipping. Dropped from Navy patrol and fighter planes, the "Coke" was used in the attack on the Japanese in their target and guided to self-destruction by its 1000 lb bomb load. Dryden continued his guided missile research work until January 1947 when he transferred his duties to Bureau of Aeronautics as Associate Director of the Bureau of Standards. He was named NACA Director of Aeronautical Research last August.

Cargo Survey Completed

Aeromax Airlines has completed an intensive airframe audit and survey of cargo of Los Angeles. The team of test engineers and cargo experts was headed by Walter Sternberg, general sales and traffic manager.

Unions Vote at Ryan, Consolidated Plants

Two Diego Calif. has become the voting ground in the battle between the International Association of Machinists (IAM) and the United Aircraft Workers (UAW) for control of aircraft production workers on the Pacific coast.

The day after the National Labor Relations Board held two elections at consolidated Ryan Aircraft Corp. it declared that neither be organized within 30 days at Ryan Aircraft Corp.

- **Conver Election—At Consolidated.** The UAW-CIO and the IAM, the International Union of Electrical Workers are seeking to represent employees for whom the IAM has held bargaining rights. At Ryan Aircraft last the IAM is trying to take over from UAW-CIO a contract it has held since it was certified in 1940.

In a early ball election permitted by the Taft-Hartley law, the IBEW successfully elected Consolidated. Yet the 45 manufacturing electronics out of the plant-wide bargaining unit under contract with UAW-CIO. The electronics cost 10 years for IBEW near for UAW-CIO and one for neither union. New votes were scheduled.

The other election at Consolidated. Yet the contract production maintenance (except electronics) and plant electrical workers are represented. The IAM present contract holder, need use the UAW-CIO 7501 to 5278 but failed to get a majority. A run-off will

Presenting Hugh Dryden of NACA

New Research Director's administration to give increased attention to aircraft industry's design and operational problems.

By ROBERT McLAUREN

More attention to current operational problems of the aircraft industry and a closer coordination of current research with aircraft industry design problems will keynote the administration of Dr. Hugh Latimer Dryden, new NACA Director of Aeronautical Research, by continuing and strengthening NACA's committee and subcommittee organizational structure, by increasing rapid for reconnaissance reconnaissance and by speedy creation of new special subcommittees to meet immediate problems. Dr. Dryden is aware to guide the reconnaissance research capacity of NACA into greater integration with the industry in the solution to specific problems through basic research.

Current emphasis of that attention to specific problems in the NACA program for the evaluation of leading characteristics of multi-engine transport planes, the fighter and vehicles of helicopter rotors and the application of



Dryden

low speed aerodynamic characteristics of a variety of aircraft configurations to present aircraft design. About 2000

Ryan Designing New Navy Plane

Pending outcome of engineering project, present work holds hopes of profit.

Addition of Ryan Aircraft Co. to the list of manufacturers with military "dream" planes now is disclosed. Ryan's role is under Navy sponsorship, and covers the production of an engineering design for an airplane project previously described in the company's annual report as being "of very advanced nature."

Navy's past relationship with Ryan resulted in production of the first turbo-propulsion lighter (intercepting engine and jet), and more recently a single-place experimental plane, the XTR-1, using a helicopter-type powerplant plus a gas turbine engine.

The engineering design contract, however, cannot be considered at this time as indicative of an immediate production order.

► **Present Work.**—Currently Ryan is building 1945 production aircraft upon manufacture and sale of the Navajo personal airplane, stainless steel exhaust system, jet engine parts and accessories, and guided missile development involving considerable manufacturing volume. The company's report shows strong inclination to emphasize Navajo production, and a comparison of total current assets of \$1,513,430 as of Oct. 31, 1947 with \$985,109 of liabilities at that date indicates an adequate working capital in support of the enterprise.

Navajo's personal airplane position may be considered secure in that the company has followed a practice of currently selling off surplus costs of the project, and is concentrated in growing production to retail sales. At this time production is at the rate of two planes per working day, which may be expected to increase as domestic sales are extended to include foreign distribution and sales developments in Argentina, Belgium, Canada, France, India, Mexico, South Africa, Venezuela and Uruguay.

► **1947 Loss.**—Ryan's net loss of \$137,691 for 1947, on sales of \$3,315,766, can be attributed to the company's unsuccessful attempt to diversify and enter a non-aerospace market in the production of stainless steel cookware. The project finally was sold to a distributor, Ryan Aircraft Co., for a loss of \$668,774.

At the close of the 1947 fiscal year Ryan's net assets amounted to \$1,113,350, or \$7.74 per net outstanding share

of stock, and after payment of all bank loans and on hand amounted to \$137,691. Buildings, equipment and other fixed assets, originally costing \$2,174,899, showed a net depreciated value of \$622,541.

Ryan's announcement of a 10-cent-per-share dividend payable this month to stockholders of record Feb. 20 is indicative of continuation of a policy of returning dividends payable on an annual basis shortly after ending of the fiscal year.

UAL May Decide Soon On Convair-Liners

United Air Lines interest in the Convair-Liner apparently has arrived and should bring a quick decision, to buy or not to buy.

If UAL buys, it may do so with the biggest individual order to Convair outside of American's which originally called for 100 planes and recently was cut back to 75. Pan American's order for 20 is the second largest Convair-Liner order to date.

Further indication that UAL is in a mood to take business after nearly six months of playing hard-to-get, is a recent visit to Convair headquarters at San Diego by a United executive group headed by J. A. Herlihy, executive vice president.

Last fall UAL sent an engineering team to San Diego to analyze the Convair-Liner. Subsequent reports were that UAL would not be interested in the transport, but Convair-Liner officials showed little serious concern. They expressed belief that with the presumed Martin 3-0-5 out of the picture UAL eventually must consider if it could buy engine replacements for its scheduled DC-3's.

Licensing to Produce Engines for Buses

Taking up the slack caused by the decline in lightplane demand, Lycoming engine division of Avco Manufacturing Corp. has expanded its operations to the motor coach field, it is disclosed in the parent firm's annual report.

Licensing will manufacture engines for Buick Motor Cars, produced by another Avco subsidiary.

The division is making every effort to secure outside contract business for production of machine parts suitable to

1947 Production

Latest figures place the annual total aircraft production in December, 1947, at 793, higher than the 780 shown in the table on page 22 of the Feb. 23 "Inventory of Air Power" issue of *Airpower* magazine. The new total covers 1947 production to 17,718 planes.

Additional data on the total value of production for the months of January, June and December, 1947, has increased the estimated value of all production for the year from \$905,821,776 to \$1,866,973,650. (An *Airpower* *Week* issue on Sept. 1, 1947, predicted that 1947 revenue would be \$1,158,433,489.) The revised figure on total value for the three months are: January, \$30,723,693; June, \$121,821,343; and December, \$99,932,569.

present facilities. Additional revenue is assured by a contract to make parts for Packard Built Rolls Royce engines for the Air Force.

It is anticipated that a forthcoming Navy contract for P-600's, NQ-4's, trainers will result in substantial orders for Lycoming R-680 powerplants and further orders are expected for SO-580's which will power the Beech Twin-Quest.

Licensing has taken over production and contracts formerly handled by the Republic Aircraft Products division, which is being consolidated with Lycoming due to increased demand for aircraft engines.

The division has recently been awarded a contract to survey and develop markets for jet engines. Studies are also being conducted on the application of air-cooled engines in industrial work since this type of power offers weight saving, elimination of coolant, and lesser maintenance costs.

Propeller Production

Production of Hamilton Standard Propeller's hollow-bladed blade rose to a new high during the last half of 1947, and during one month exceeded production of duralumin blades, the company announces.

Hollow-bladed blades are now in use on Martin 203's and Eastern Air Lines' Gulf State Constellation's.

Hamilton Standard claims it has worked out several new manufacturing processes in solving the design of the blades, which designers a shell with a central spar at its main stress-carrying member. The air spaces in the blade are filled with a hard sponge synthetic rubber to increase structural rigidity.

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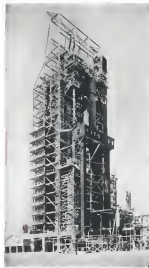
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When aircraft crash on landing—fire is not isolated from what is exposed—fire the firemen and suppress the fire and passengers—directly this can only be controlled by the application of compressed fire-fighting media in the shortest possible time.

The "PYRENE" Airfield Crash Tender—a rare departure in specialized fire-fighting—combines mobility and maneuverability with an accurately high flow and CO₂ output.

Based on a modified "Q-L-A" (low-wheel drive) chassis with high ground clearance which is capable of rapid movement over rough or soft ground. It carries 40 gallons of "PYRENE" Foam Compound and 500 gallons of water which, through the medium of

"PYRENE" Mechanical Foam Generators, produce 2500 gallons of foam per minute for approximately 1 1/2 jet moments. In addition, the vehicle is fitted with 4-50 lb. CO₂ gas cylinders connected through a manifold to two hose reels, increasing up to 1000 ft. distribution. The output is 100 lb. of CO₂ gas per minute for approximately 1 1/2 jet moments.

The Crash Tender is designed to provide maximum maneuverability, ease of control and rapid action. The Compound Foam Fire Pump is built within the Tender chassis, 100-400 G.P.M. of water-foam compound solution at 750 lbs. pressure per square inch. This pump can be brought into action on track to the rear of the fire working front as is, provided as soon as the lower air line and

hose particulars and specifications will be given on application.

Write to The Sales and Service Department.

THE PYRENE COMPANY LIMITED

8, Grosvenor Gardens, London, W.1, England. Cable "Pyrene London" Phone: Victoria 34512

posed for landing gear attachment fit legs.

However, General's engineers elected to attach to the unswayed spars, allowed from the tank wall, fittings that extend downward to provide landing gear attachment points conveniently below the landing gear line.

Although no destruction tests have been conducted to prove out the theory of a snap-off of landing gear in a crash, engineers feel that the design can be considered a true safety device.

This probably is one of the few tests (if not the only one) not conducted to prove the airplane's structure and components.

Final-Stage Testing—As a result of the DC-6 investigations, and extensive modifications ordered by the Civil Aeronautics Administration and others as well as by the factory, final stages of Comstock-Lewis testing have been begun. The ground and flight testing program extended well beyond the required 150 hr. of accelerated service testing, and included in discovery and correction of various minor discrepancies before delivery to airlines very began.

Particular attention was paid to the Lear's jet separator exhaust and heat exchanger systems, during safety tests.

Fire tests within the engine nacelle and the long jet exhaust tube leading through the wing were under the most severe that could be devised.

Simultaneously, sparkplugs placed within the hot wing intake areas were fired constantly to determine that no explosive gas mixture was being carried into the wing and hot air ducts from the separator tube. Reported tests failed to produce a fire.

In light tests, the airplane has been subjected to simulated landing at hundreds of acute stalls without damage to structure or wiring of the pressurized cabin.

The landing gear was subjected to 20,000 cycles of raising and lowering on a ground test stand, the equivalent of more than two years of operational use.

Present indications are that Comstock has finished the longest test period of a transoceanic corporate transport, involving from the company's plunge into the field of commercial transport aircraft.

Engineers have been made that investment involved in the design and development of the transport will reach \$28,000,000 before substantial income recovery begins.

One might well wonder why Comstock elected to enjoy a risk so strange to the company, and involving such risks.

Comstock officers explain it this way: Before the war ended it became apparent that military orders would be not about to the winning point upon conclusion of hostilities.

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The only alternative to practically complete abandonment of the inquiry is large capacities and production have been only into commercial transport manufacturing.

The carryback legislation, with its guarantee of a returning of assets that might be incurred in development of private aircraft, was encouraging, and proved to be an important factor in the company's decision to gamble on commercial designs.

Subsequently, several commercial design proposals were studied.

A four-engine passenger cargo transport, Model 30, was born, market tested, and abandoned as a carryback loss.

An executive transport went into preliminary design at the company's Valley Field Division, and was abandoned after an expenditure of approximately \$100,000.

In an ensuing period of engineering give-and-take, Armstrong and Conner developed from an experimental 30 passenger transport, Model 110, the basic design of the Convair-Learjet. The prototype instance of the 110 were constructed. In the last planning of the period, while cash customers were being turned away from rapidly filled DC-3s, the cabin was extended to seat 49. It was a blow to Conner when Armstrong insisted upon a five reduction of fuselage diameter from that of the Model 110. It meant retreating for production of the new plane. Conner had hoped that at least a portion of the new line's fuselage could be built upon rigs already set up for the 110.

As was the case with the Model 30, Model 110 finally was assigned to the fate of the carryback, and broken up for components with all at a loss. The suit in anti-trust-related patent litigation—The Convair-Learjet, under the now-altered identity of "Model 246," flew on March 16, 1947. Airline deliveries were postponed for mid-summer. Since delivery, external shortages, designs of major and critical components all pointed the prospective delivery date into 1948.

It is true that the market is not what Conner once envisioned.

Early in the history of the project Conner estimated that a market of 1,000 units existed to be split up by those who would produce new two-engine transports. Valley, two years later, the market potential appears to Conner to be closer to 700 units.

Thus far, Conner has orders, with substantial down payments, for 151 Learjets. Even with a price book, a high margin return, the company probably will have to build and sell close to 300 units to wipe out its losses and break even. Conner is hopeful, as it covers other transport manufacturers that it will soon see a sizeable order from the Army.

NEW "FLYING CRANE" COOLED BY FEATHER-WEIGHTS



The KHP, built by the Piasecki Helicopter Corporation in collaboration with the Navy, represents the first successful tandem rotor helicopter. Typical of the advanced engineering that went into this new ship are the FEATHER-WRIGHT all-aluminum oil coolers... developed in the largest, most modern wind tunnel laboratory in the aeronautical heat exchanger industry.

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Hoppi-Copter In Second Test Phase

The Hoppi-Copter, invented by Hasec V. Penrose of Seattle, Wash., has successfully made the transition from hovering to forward flight. The first forward flight was headed, extending only some 100 ft. at a speed of approximately 15 mph, but additional flights are planned under a continuing test program on an almost-daily schedule.

No attempt has been made to exceed the 10 ft. nominal altitude and in current tests, but Mr. Penrose believes that attainment of higher altitudes will not present serious problems.

Prior to making the first forward flight the three Penrose machines had made some hovering flights to an altitude of 10 ft. or so, and hovered for as long as three minutes at a time. Each plane has now "logged" about four hours.

Since some of the hovering flights were made to reach of 15 mph, it was possible to collect much valuable data which aided in the ultimate achievement of forward flight.

As to much as the Hoppi-Copter is designed for use at those top height (about 30 ft.), it has not been considered necessary thus far to stress high altitude flights, however, its engine are already preparing for tests from the 5,000 and 6,000 ft. levels of Mt. Ranier to investigate flight characteristics under those atmospheric conditions.

A controversial point raised by the

inventor is that the Hoppi-Copter gains no benefit from the ground cushion effect that aids the conventional helicopter. Height of the ground cushion, Penrose says, is determined by the difference between the radius of the rotor and the height of the rotor off the ground. As the radius of the Hoppi-Copter rotor is just over eight feet, and the blades are that same distance off the ground, the machine receives no benefit from the ground cushion effect.

Another helicopter engineer states that each role-of-blade designation of the limits of ground cushion effect is open to debate, but is confident that certain ground cushion effects will be experienced at one blade radius, and that the cushion does not increase at a given altitude, but diminishes to in-

finity. He says that in a test of one helicopter at Wright Field, the manufacturer claimed its machine could use vertically 30 ft. under test conditions, but actually it could only attain 40 ft. Indication was that its rotor design its flight was benefited by ground cushion effect.

Mr. Penrose believes that the principal mechanical use of the Hoppi-Copter will be by farmers, ranchers, and operators, largely in rural and suburban areas, extensive work would be one of the factors that would work against its use in large cities.

Hoppi-Copter Models 103 and 104, which were built simultaneously (completed just a little over a month ago), can develop up to 42 hp but so far have not operated at over 75 percent maximum power.



Hoppi-Copter Models 103 (left) and 104 are shown here during recent hovering tests

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*Patent pending.

Eclipse-Pioneer DIVISION OF

TETERBORD, NEW JERSEY



In Lockheed Constellation's new ducting installation, carburetor scoops have been mounted on the top of each engine nacelle.

New Ducts Give Power Increase

By-pass system for takeoff ups Constellation's rating by 800 hp.

A new ducting system for augmenting engine power on takeoff has been developed by Lockheed Aircraft Corp. for use on the Constellation. Cleared as an engineering procedure, the new ducts channel air intake and exhaust travel distances and add 880 hp to the takeoff power of the big plane.

In first flight demonstration of the new system, witnessed by an Associated Press correspondent, the airplane became airborne after a run of only 1,383 ft at 88 percent of its designed gross weight of 184,000 lb and reached a height of 99 ft at 2,783 ft from start of roll.

On a subsequent flight at 160,000 lb gross, the heaviest was off the ground after a full-screen accelerated roll of only 1,166 ft.

Water injection takeoff power output of its Pratt & Whitney 4560 engines was 1,490 hp, or a gain of 260 hp per engine over previous tests.

The new ducting by-passes the normal induction system, for takeoff so that air is drawn only 1 ft, with a single 90-deg. flow bend, directly to the carburetor. Previously, carburetors had to travel through 15 ft of ducting, the restriction, and supercharge with resultant friction losses in

ram efficiency of induction system.

Additional features of the installation is exhaust collector ring betterly valve, which is itself, is opened to permit engine to exhaust directly into outside air through opened cooling duct and as a measure, that carries them over top surface of wing during the brief period of takeoff.

Constellation project engineer, W. A. Fisher, points out, however, that the use of the technique with the Constellation does not necessarily approve its application in all installations of the P&W Wasp Major. Obviously, varying designs of air intake ducting will set up differing conditions and varying gains in power output through installation of a takeoff duct duct system.



Constellation in test flight takeoff, less than 4,000 ft from start of roll. Note steep climb angle and that main gear and nose wheel are already in retracted position.

Further structural changes in the plane itself include removal of the overhead windows above pilot and co-pilot and their replacement with solid metal plates. This was done because flight crews found that little was gained, in respect to safety reason, by overhead glass panels, and one of the panels (above pilot) was repeatedly hit as turbulence decompression in flight at 25,000 ft.

A previous explosive decompression—caused by rupture of a fabric passenger covering of crew escape duct, leading from top deck to bottom of fuselage—had emboldened greatly the need for all active crew members to be prepared to make manual use of oxygen systems in event of a sudden cabin pressure failure and total decompression. When the duct cover failed, severe reactions were experienced almost instantly by personnel, some of whom had become instantly removed from oxygen outlets. Pilot, in that instance, had just completed a routine check of his mask, and his ability to make immediate use of it was a factor in maintaining full control of the plane and effecting a successful landing. Crew members reported decompression discomfort was moderate and without lasting effect.



Swept Wing Taxes Piloting Skill

Bell L-39, first U. S. swept wing airplane, is test vehicle in effort to develop essential data for our high speed fighters.

By ROBERT McARTHUR

Though one of wing-tearp for its (making the critical Mach number of an airplane was evolved in a consequence of theoretical calculations, the handling characteristics of such configurations—particularly at low speeds—have required actual flight tests with an experimental aircraft.

Results of tests with the first U. S. swept wing plane (in which sweep was used for high speed drag alterations as distinguished from stability use, available) and indicate the nature of low speed stability and control difficulties of this configuration.

► **Details of L-39.** Early in 1946, the Navy Bureau of Aeronautics prepared specifications for a swept wing test aircraft and a contract was awarded to the Bell Aircraft Corp. for the construction of two complete airplanes.

The odd design, designated L-39, consisted of a standard Bell P-61 Kingcobra fighter modified to incorporate swept wing panels swept back 35 deg along the 25 percent chordline.

The wing was increased substantially the same but the sweptback reduced the span to 34 ft. The main gear was redesigned into a fixed strut landing gear and the structure of fuselage and combat equipment varied nearly 300 lb.

To provide the increased directional stability required, a nosecone section 4 ft 4 in. was added behind the power plant compartment, a large ventral fin was also added, and the entire aircraft was of fuselage was tilted up.

First test flights of the L-39 were carried out by Bell test pilot Alvin M.

Joe Johnson in the spring of 1946 and the two planes were subjected to an extensive flight test program at Bell in throughout that year. Meanwhile, the National Advisory Committee for Aeronautics at its Langley Laboratory conducted extensive wind tunnel tests on an L-39 model to determine basic aerodynamic data.

The two L-39 airplanes were delivered to Langley Field early the following year for more comprehensive flight tests by the NACA. A detailed study of the configuration was undertaken by NACA Test Pilot John P. Rader and NACA Engineer S. A. Nyberg, and the project continued through the summer of 1947.

As a result of the wind tunnel test program, the NACA fitted the L-39 with 40 percent span fixed slots extending from the 40 to 50 percent of each wingspan to improve the airflow over the suction region at high angles of attack. These slots were later extended to the wing tip but available data only covers the 40 to 50 percent installation.

► **Test Data.** Chief results of the flight tests to date is the swept wingment of lateral stability. The conditions arose from the large dihedral effect of swept back wings. Since the L-39 has low dihedral, it exhibited a high degree of directional stability with and without the added at all altitudes tested. The severe oscillations of the plane with steep bank free and fixed wing without damped but the rolling oscillations produced by these oscillations were relatively large.

At low speeds (such as during landing and takeoff) the L-39 produces a

high dihedral effect, which results in large adverse deflections being required to correct the effects of sudden nose down. This would indicate that swept wing aircraft may be difficult to fly during take off and landing, a tendency borne out by extensive wind tunnel tests. At higher speeds, the opposite is true and the dihedral effect becomes low and even negative, rendering the aircraft difficult to fly in gusts and low speed air.

Indications that swept-wing aircraft have comparatively poor maneuverability appear in the low maneuver rolling velocities attainable with the L-39. The tests show that the plane has a maximum value of 0.025 (p) in the rolling velocity in radians per second, 5 ft wingspan in fact, and V the true air speed in feet per second, of only 0.052 for a right roll and 0.039 for a left roll at 200 mph, considerably below the value of 0.07 considered the necessary minimum. At speeds below 200 mph the L-39 displaced even lower rolling velocities. However, the control forces were low, considerably less than the minimum recommended.

While generally confirming predictions based on NACA wind tunnel tests and theoretical calculations, the L-39 tests were the first full scale flight tests permitting pilot reaction to swept-wing aircraft handling qualities. The results reported here are preliminary and the program is being continued with special reference to maneuvers and double- and triple sections on swept wings at low speeds.

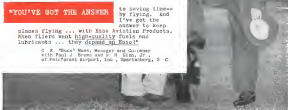
(References indicated by superscript in text are available on request.)



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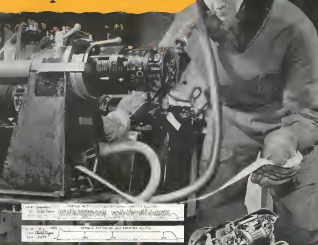


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Facilities Electrical Checking

New test equipment announced by Unitek Mfg. Co., San Bruno 9, Calif., for testing numerous electrical components on large aircraft such as Boeing Stratocruiser Douglas DC 6 and Lockheed Constellation, is also suitable for checking instruments on smaller commercial planes. Overall test bench adaptable for aircraft having minimum number of units to service, permits three men to work simultaneously on check major components. With large number of aerials, bench can be used by experienced department as field check.



as set to tie up production test equipment. For programs to improve testing methods, bench serves as one viable experimental unit. Also offered are individual benches performing separate functions for low locations in facilities (instrumentation units).

Staves Steel-Cutting Costs

Hand tools for cutting stainless steel are intended to afford universal manual basic procedure for all types of plant and shop operations. Made by Air Reduction Sales Co., 60 E. 42nd St., New York 17, N.Y., staff is available in 21 and 35 in. lengths, both with 30-day lead. Features include double Alcoa metal head, stainless steel tubes for rigidity and heat resistance, stainless steel feet and added handle for maximum ease of operation, remote control switch to automatically coordinate the feed with cutting oxygen (eliminates separate flux control), and standard cutting tips.

For Aircraft Spray Work

New spray gun offered by Kellogg Div. of American Brake Shoe Co., 97 Humboldt St., Rochester 9, N.Y., is stated to give exceedingly smooth finish through low line atomization. Detachable effects from air pressure, dry



and eddy currents are eliminated by using single air passages in gun body and by providing uniform flow of air stream from wing jets and center orifice. Head can be quickly detached, and single five-minute assembly required for cleaning. Disinfectants in air cap wing jets are intended to maintain perfect pattern of highest spray pressure, ensuring fabric or paint in spray pattern. Only three spray heads are required to cover full range of paint thickness.

Technical Tracing Medium

"Papercloth," technical drawing paper, introduced by Chlorpact Paper Co., Dept. 18-17 First St., San Fran-

isco 4, Calif., is stated to have included studies under all through-line conditions, resisting stretching, shrinking and buckling, with surface tending to peel or rub with equal facility. Product permits easy cleanup and almost damage-free from erasing or folding.

Chairs Cockpits Safety, Comfort

Fitting snugly against side upholstery of plane cabs, chairs manufactured by Pioneer Plastics Co., Manchester,



Conn., may be adjusted in matter of seconds. Easy to install, seats often provide glove centers cabs safety plus safety, and eliminates need for wearing chairs in flight. Constructed in acoustical with military standards, chair is made of Nylon, with tubing of high tensile strength. Groups in regular 24 in. size.

Large-panel Instrument Lighting

Repetitive instrument illumination is announced by Pack-Mold Co., Inc., Industrial Corp., 55-05 Van Wyck Blvd., Flushing 3, N.Y., is molded from flexible plastic, uses standard lamps, and is equipped with gaskets and wire nuts terminated for quick connection to plane's wiring system. Molded as Union Glo, unit is available in 12 and 24 in. sizes. Adjustable light intensity and elimination of instrument glare help to keep eyes from distraction. In addition to use for illumination of complete panels, magnetic compass, and



special groups of instruments at navigators or radio operator stations, brighter light is available through lens window for map reading, cabin lighting.



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AIR TRANSPORT

WAL Finds Consolidation Vital To 'Belt-Tightening' Program

Drinkwater describes joint service agreements and urges entire industry to take liberal doses of some medicine in interest of economy.

By SCHOLER BANGS

A month's worth of "belt-tightening" sales because of cutting Western Air Lines to financial health by the end of this year. This came on the verge of bankruptcy at the start of 1965.

A 40 percent slash in company personnel since 1963 in October, 1964, to about 1900 at present has been only one step in the carrier's economy program. Sale of the Denver-Los Angeles route and equipment to United Air Lines Jet Airport for \$1,750,000 put the company well in the black for 1965. In 1964 Western had a net loss of more than \$900,000.

► **Prescription Recommended**—WAL is taking liberal doses of consolidation at every turn, and President Terrell C. Drinkwater believes it good medicine that the entire air transport industry will have to accept if recovery from 1960's low fuelled airlines is to be effected.

When Drinkwater talks of consolidation, he means consolidation of all airline functions which reasonably can be executed by one staff to serve two or more carriers in a given area. The latest 40 percent Western is cutting into agreements with other carriers for mutual benefit in ramp service, field maintenance, cargo handling, radio service, field ticketing and reservations service, and even city ticket office sales.

► **Reduced Pay**—Drinkwater told AVIATION WEEK that "there are no more than the things the airlines learned to do, and do efficiently, years ago. It is amazing that in these 20 years since the airlines haven't shown much good sense."

"The only reason I see as why people in the airline business don't consolidate today is because they didn't do it yesterday—they seem to have to go looking for a precedent when a new but really old idea hits them in the face. We've well along in trying out consolidation now up and down our system. The resistance has been strong, but we're making headway."

► **Bagged Industries**—My only concern is that after all of us get on our feet there will be some who feel the pinch of rugged individualism and begin thinking about the "good old days" when everyone has his own beautifully outfitted cockpit of independent sales and servicing staffs, staffed as seasonal usage with separately-owned, highly decorated masses of cars, trucks and loading gear, and many crews who wandered what to do with themselves between planes. If that ever happens we should have our heads examined."

Here are snippets of Drinkwater's efforts at the joint city tickets.

► **Minneapolis**—Mid Continent Airlines provides Western with complete airport ground handling in addition to radio service. At the WAL city ticket office Western handles ticketing for Capital

Airline (PCA) after the latter carrier has no personnel in that office.

► **Rochester, Mass.**—Mid Continent provides radio coverage for Western, and WAL has the use of MCA's ramp equipment on a joint lease basis.

► **Wankende, Alberta**—Trans-Canada Air Lines provides WAL with complete service at the airport in addition to reservations and ticketing.

► **Belle, Mont.-Western** screens Northwest Airlines' aircraft with gasoline, and negotiations are under way for WAL to provide radio coverage for Northwest.

► **Ogden, Utah**—Negotiations are under way with United for joint ticket office.

► **Salt Lake City**—Western screens Northwest Air Lines at the airport and also handles radio coverage and reservations for the carrier.

► **Las Vegas, Nev.**—Western provides complete airport ground service for United in addition to handling radio coverage and reservations. WAL also has an agreement with United for a joint city ticket office. At the airport, TWA and Bonanza Airlines provide Western with emergency medical service.

► **San Diego-Nation & Kelly**, a fixed base operator, handles emergency maintenance and ground crew for Western. Effective last month, WAL was to move its with American Airlines for joint occupancy of a city ticket office.

► **Los Angeles**—Western screens one flight a day for Southwest Airways, providing a mechanical turnaround check. WAL also operates a post prior and baggage service with American at the airport.



STRATOCHIEF GROUND TEST

It was topped agent 1 ft. a Boeing Stratochief is shown in a possible aircraft flight attitude during a test check which was part of GAA's ground inspection of the craft.

► **Passes**—Passes—Western provides complete ground and cabin service for American, W.A.L. and American on joint tickets in two city ticket offices.

► **Oakland**—Western provides ground service and cabin coverage at the airport for American and also participation in joint porter assignments with TWA, United and American. Western and American share a city ticket office.

► **Portland**—Northwest handles complete service at the airport, including transportation check-in and baggage.

► **Seattle**—Northwest provides complete service at the airport, including transportation check-in and baggage.

So far, Western has been unable to make any risk of them being due for flying consolidation agreements. Each has been a negotiated contract, whether worked out on a basis of a member pre rate of fare paid by the participants or a division of costs on the basis of volume of business produced in a given area. W.A.L. has found costs where another airline is willing to enter into a field service consolidation arrangement at one city but is unwilling to do so in another community because at the latter point the two carriers are competitors.

► **Pass**—Resolving—Seen—On the subject, Banker's Union "Such as this field service doesn't make sense, for there is no reason in the world why two or three dozen airlines, some of them about competitors, should simply turn problems by sharing a common ticket office in which they agree at the counter works for all the airlines. The agent tells the customer who wants to fly from Los Angeles to New York. 'You have selected Airline United, TWA or American for your trip. All have nearly the same travel time. Fares are identical. How do the schedules. How do you wish to be served?'

► **Individual**—Individuals and advertising departments have done a good case. public use, has been out of the passenger already will have made up its mind concerning the airline he is going to use and use expenditure of money in the ticket office to change his mind could be wasted."

► **Study**—Under Way—How much in dollars W.A.L.'s consolidation have made, Dr. K. L. Smith, an economist in Los Angeles, has been asked to make a study of the consolidation, pending and rate report so that the department can improve efficiency, and pay and it still needed.

A preliminary study of results is being made by Don P. Smith, another secretary and general attorney of Western. A report of his findings will be made to C.A.B. in the near future, pending and rate report so that the department can improve efficiency, and pay and it still needed.

(A second article on Western Air Lines' international reorganization will appear in the next issue of Aviation Week.)



AIRBAG PICKETING

A lightplane taking a leisurely cruise "National Airlines pilots on strike, normally appear over Miami in the Air Line Pilot Association's new world of picketing. With NAL's unwilling to authorize service to additional points on its airline using non-strike pilots, ALPA asserted it would extend its aerial picketing to all cities into which the carrier operates.

NAL Pushes Service Despite Pilot Strike

New the largest pilot militant in air transport history, the National Airlines strike has evolved to second month with little indication of termination. The carrier last week announced that all pilot wages have been filed. G. T. Baker, NAL president, and his company had submitted the most qualified and experienced pilots from thousands of applicants.

► **Strike**—Pilot—Among the new pilot crew 15 forecasts completed by Santa Fe, Denver in the month's strike, travel, all-village operations. Santa Fe general personnel also were to join National, although mechanics who walked out before the pilot strike. President Baker assured the non-strike pilots that their jobs were permanent.

By the beginning of last week, National had resumed service on its Miami-New York and Miami-Florida links. Previously, flights were restricted between Miami and New Orleans and between Miami and Key West.

► **Impedance**—Obtained—National has obtained some restrictions relieving members of both the Air Line Pilot Association and International Association of Machinists from acts of violence or threats of violence. The carrier alleges that the association has been violated by the machinists.

ALPA has expanded its aerial picketing to include ground picketing of ticket

offices. The union said it would continue picket lines at every station on National's system.

► **Mail**—Pay—Fight—Meanwhile, the carrier has received pressure of additional mail pay from C.A.B. based on conditions existing prior to the strike. ALPA last week, pointed to protest the action, charging that C.A.B. is offset was belittling the company in the better-off flight with the pilots which will have an important bearing on the carrier's future position in the entire air transport industry. The pilots said that on two previous occasions, C.A.B. had turned down National's request for more mail pay.

Finding that NAL's financial position is critical, the Board issued a show cause order which would force the company a total of \$145,000 for the period July 14, 1945, through Dec. 31, 1947. The present is on a basis of 60 cents a line mile for a maximum capacity load (three load) of 420 lb per plane mile flown.

Actually, National carried less than 100 lb per plane mile, and under the weight 60 cents a line mile would cost the company approximately \$107,000. I would have earned about \$107,000 had mail pay in the 51 months period, then the board's proposed action will give National additional income of well over \$400,000.

► **Future**—Rate—During 1945 C.A.B. has proposed a maximum capacity factor of 110 lb for National and 200 lb beginning Jan. 1, 1946. As a result NAL was forced to raise its rates to meet

mail pay this year as it would have under the straight 60 cents a line mile rule.

National had told C.A.B. that increased mail pay was necessary to present a "financially balanced picture." The company had an operating loss of about \$475,000 in December and January, the first two months of its usually profitable Florida season.

These deficits were in addition to \$1,775,000 in losses during the seven-month period ended last Nov. 30. As of Jan. 31 of this year, National's current obligation exceeded available cash by \$321,000.

SHORTLINES

► **Air Lines** (Irish Air Lines)—Reports a net deficit of \$336,624 for fiscal year ended March 31, 1947. Jointly controlled by the Irish Government, British European Airways and British Overseas Airways Corp., the company had gross revenue of \$1,089,180 for the year.

► **BOAC**—Has requested an increase in the Bermuda Development Co., owner of hotels and recreation facilities on the island. The American Airlines and Airline Corp. also held interests in the development company.

► **British Commonwealth Pacific Airlines**—Will take over the trans-Pacific service from Australia to the U. S. and Canada on April 21. The operation is now conducted by Australian National Airways, a private company which has announced it will fight to return the service.

► **Continental**—Has asked C.A.B. for new rates from New Orleans to San Francisco and Los Angeles via Houston, San Antonio, El Paso, Phoenix and other points, between Denver and Phoenix and other points between Denver and Phoenix via Albuquerque and other points, and from San Antonio, Tex., Hobbs, N. Mex., and Wichita Falls, Tex., to Houston.

► **Florida**—Early this month was threatened to start service to London. The company has a fleet of 100 seats of \$126,795 and operating profit of \$186,465 in 1947 against net profit of \$188,223 and operating profit of \$352,261 in 1946.

► **Norfolk**—Has been awarded \$1,107,578, or 29.36 cents a plane mile, as mail pay over its entire system between May 1, 1945, and April 30, 1947. The present grant NEA is seven percent return on its investment for the two-year period.

► **Northwest**—Has signed an exclusive pact with Scandinavian Airlines System, covering consulting services at New York. Single tickets and coun-

ate reservations between points on the two systems are provided along with joint scheduling and a possible interchange of aircraft.

► **NWA's** new Detroit-Washington link is to open March 15.

► **Pan American**—Has inaugurated regular service to Johannesburg, South Africa, via the Azores, Dakar, Accra and Leopoldville.

► **Panama International**—In laying plans

to serve several hundred displaced persons from Europe to Chile, PIA would be the only one to fly at New York, with PIA going on there.

► **Philippine Air Lines**—Plans to start DC-3 service between San Francisco and Manila next month.

► **Sabena** (Belgian Airlines)—At its share a profit in 1947 for the third consecutive year. Earnings will be less than the record \$2,800,000 in 1946 because of rising costs. Sabena DC-3s and DC-4s are scheduled to fly the route a fleet to 50 planes. Regular all-weather flights between New York and Brussels were begun last month.

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stresses do not appear to offer advantages sufficient to outweigh the possible harmful effects on the services of other carriers." Madden asserted "Economic cost accounting (the shorter freighted air service) will be available only upon the advent of Pan American to the domestic market."

► **Rate Level**—The CAB currently pointed out that if PAA's passenger rates are established at the government level consistent with elsewhere long haul operations in competition, which must serve low traffic intermediate routes, would be at a distinct disadvantage.

Pan American estimated domestic air travel volume in 1949 would reach 25 billion revenue passenger miles. Of this total, PAA expected to carry 2.5 billion, or 10 percent, if its current application was granted.

► **Traffic Volume**—Madden observed that United Air Lines estimate of between 9.5 and 10.5 billion revenue passenger miles in 1949 was probably based on accurate facts and reasoning. (The 1947 total was slightly over 6 billion revenue passenger miles). The CAB estimate emphasized that PAA did not attempt to argue that large traffic increases could not be handled by existing carriers.

Pan Americans calculated that the entrance of domestic carriers into the transcontinental field will result in reducing PAA's share of the international line now from the almost 100 percent it formerly enjoyed to less than 75 percent. Without domestic rivals, PAA and it would carry only 6.6 percent of all domestic and international traffic handled by U. S. carriers. With the proposed domestic routes, the present age would rise to 15.4 percent.

► **Look Forward**—Madden's decision pointed PAA's contention that its future position is being weakened because its potential share of the international or travel market has been reduced. He pointed out that during the first seven months of 1947 Pan American carried 64 percent of all international traffic

handled by U. S. flag carriers. Madden admitted this could be reduced when Russell inaugurates South American service and Northwest reenters international operations.

While recommending against Pan American's application as a whole, the chairman's report favored the New York-Philadelphia-Baltimore-Washington-Miami link, pointing out that this route would enable PAA to provide a through service between Europe and Latin America. Madden and the number of international travelers that would move over this route far exceeds the number which would move over any other link in the PAA proposal.

"The movement is of such proportion as to raise a serious question as to the propriety of longer subbuilding from such facilities the advantages of using one carrier for the entire journey," Madden declared.

Feeder To Expand

Aviation Airways, Phoenix, which last month was designated for feeder routes in Arizona, New Mexico and Texas, plans to add five to six planes to its present fleet of four DC-3s and to expand its personnel from 12 to 270 within the next six months. The carrier flew more than 7,000,000 passenger miles in its route service prior to being designated as an inter-state feeder by CAB.

'Skyroute' Case Ruling

CAB public counsel in the 'Skyroute' case one has found that the board has single power under the Civil Aeronautics Act to issue certificates for all routes and services such as those proposed by Denver Airway, Pittsburgh, N. C., and American Air Report & Report Co., Miami Springs, Fla. In addition to nondiscriminatory transportation, the charge for the proposed route in vacation periods in the U. S., Latin America, Canada and Alaska would include hotel accommodations, meals, sightseeing, ground transportation and miscellaneous services.

AA Pilot Sista Faces Certificate Revocation

Former American Airlines Pilot Charles R. Sista, whose resignation with a DC-4's gear lock mechanism went the craft into a 7,000 ft. dive near El Paso, Texas, last Oct. 8, faces loss of his pilot certificate for at least a year.

The penalty is provided for in the actual denotation of a CAB safety certificate. If no exception is moved to the Board by March 19, the initial decision will be adopted by the Board.

The examiner found that Sista analyzed and disengaged the gear lock mechanism, causing the DC-4 to plunge downward and to perform half of an inverted loop, endangering the lives of 49 passengers and the crew of five. He added that Sista demonstrated disregard for the principles of safety with respect to the operation of aircraft and a lack of the discretion and good judgment necessary for the holder of an airman certificate with airline transport pilot status.

Turner Gets Certificate For Feeder System

Recent Turner Aeronautical Corp., Indianapolis, which was designated for a 645 mile feeder system in CAB's Great Lakes Area division last September for contingent on a showing of adequate support, has been issued its route certificate.

The Board found that of the 14 points on Turner's route, all except Cleveland, Ill., Bloomington, Ind., Bedford, Ind., and Greensburg, Ind., have adequate airport facilities. Until such fields are available at the three Indiana cities, Turner will be authorized to operate only between Grand Rapids, Mich. and Indianapolis and between Chicago and Indianapolis. Service on the Indianapolis-Cleveland and Indianapolis-Lansing segments will be suspended.

New British Bid

British Caribbean Airways has asked CAB for a longer air carrier permit to operate between Kingston, Jamaica, and Miami.

CAB SCHEDULE

- May 4—Hearing on CAB-Cleveland & El Paso line by American Airlines City-New Orleans route. Forfeited from Feb. 15-16, 1949.
- May 6—Hearing on additional service in Cleveland, Ohio. (Hearings also on Apr. 6—Hearing on American Airlines' new Cleveland to Detroit line in New York made none. (Hearings 1949).
- May 10—Hearing on Capital Airlines (CNA) new route. (Hearings 1949).

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Agency-Radio & Service Co.	680
Radio-Airplane Co., Inc.	
Agency-Radio & Service Co.	685
Radio-Airplane Co., Inc.	
Agency-Radio & Service Co.	690
Radio-Airplane Co., Inc.	
Agency-Radio & Service Co.	695
Radio-Airplane Co., Inc.	
Agency-Radio & Service Co.	700
Radio-Airplane Co., Inc.	
Agency-Radio & Service Co.	705
Radio-Airplane Co., Inc.	
Agency-Radio & Service Co.	710
Radio-Airplane Co., Inc.	
Agency-Radio & Service Co.	715
Radio-Airplane Co., Inc.	
Agency-Radio & Service Co.	720
Radio-Airplane Co., Inc.	
Agency-Radio & Service Co.	725
Radio-Airplane Co., Inc.	
Agency-Radio & Service Co.	730
Radio-Airplane Co., Inc.	
Agency-Radio & Service Co.	735
Radio-Airplane Co., Inc.	
Agency-Radio & Service Co.	740
Radio-Airplane Co., Inc.	
Agency-Radio & Service Co.	745
Radio-Airplane Co., Inc.	
Agency-Radio & Service Co.	750
Radio-Airplane Co., Inc.	
Agency-Radio & Service Co.	755
Radio-Airplane Co., Inc.	
Agency-Radio & Service Co.	760
Radio-Airplane Co., Inc.	
Agency-Radio & Service Co.	765
Radio-Airplane Co., Inc.	
Agency-Radio & Service Co.	770
Radio-Airplane Co., Inc.	
Agency-Radio & Service Co.	775
Radio-Airplane Co., Inc.	
Agency-Radio & Service Co.	780
Radio-Airplane Co., Inc.	
Agency-Radio & Service Co.	785
Radio-Airplane Co., Inc.	
Agency-Radio & Service Co.	790
Radio-Airplane Co., Inc.	
Agency-Radio & Service Co.	795
Radio-Airplane Co., Inc.	
Agency-Radio & Service Co.	800
Radio-Airplane Co., Inc.	
Agency-Radio & Service Co.	805
Radio-Airplane Co., Inc.	
Agency-Radio & Service Co.	810
Radio-Airplane Co., Inc.	
Agency-Radio & Service Co.	815
Radio-Airplane Co., Inc.	
Agency-Radio & Service Co.	820
Radio-Airplane Co., Inc.	
Agency-Radio & Service Co.	825
Radio-Airplane Co., Inc.	
Agency-Radio & Service Co.	830
Radio-Airplane Co., Inc.	
Agency-Radio & Service Co.	835
Radio-Airplane Co., Inc.	
Agency-Radio & Service Co.	840
Radio-Airplane Co., Inc.	
Agency-Radio & Service Co.	845
Radio-Airplane Co., Inc.	
Agency-Radio & Service Co.	850
Radio-Airplane Co., Inc.	
Agency-Radio & Service Co.	855
Radio-Airplane Co., Inc.	
Agency-Radio & Service Co.	860
Radio-Airplane Co., Inc.	
Agency-Radio & Service Co.	865
Radio-Airplane Co., Inc.	
Agency-Radio & Service Co.	870
Radio-Airplane Co., Inc.	
Agency-Radio & Service Co.	875
Radio-Airplane Co., Inc.	
Agency-Radio & Service Co.	880
Radio-Airplane Co., Inc.	
Agency-Radio & Service Co.	885
Radio-Airplane Co., Inc.	
Agency-Radio & Service Co.	890
Radio-Airplane Co., Inc.	
Agency-Radio & Service Co.	895
Radio-Airplane Co., Inc.	
Agency-Radio & Service Co.	900
Radio-Airplane Co., Inc.	
Agency-Radio & Service Co.	905
Radio-Airplane Co., Inc.	
Agency-Radio & Service Co.	910
Radio-Airplane Co., Inc.	
Agency-Radio & Service Co.	915
Radio-Airplane Co., Inc.	
Agency-Radio & Service Co.	920
Radio-Airplane Co., Inc.	
Agency-Radio & Service Co.	925
Radio-Airplane Co., Inc.	
Agency-Radio & Service Co.	930
Radio-Airplane Co., Inc.	
Agency-Radio & Service Co.	935
Radio-Airplane Co., Inc.	
Agency-Radio & Service Co.	940
Radio-Airplane Co., Inc.	
Agency-Radio & Service Co.	945
Radio-Airplane Co., Inc.	
Agency-Radio & Service Co.	950
Radio-Airplane Co., Inc.	
Agency-Radio & Service Co.	955
Radio-Airplane Co., Inc.	
Agency-Radio & Service Co.	960
Radio-Airplane Co., Inc.	
Agency-Radio & Service Co.	965
Radio-Airplane Co., Inc.	
Agency-Radio & Service Co.	970
Radio-Airplane Co., Inc.	
Agency-Radio & Service Co.	975
Radio-Airplane Co., Inc.	
Agency-Radio & Service Co.	980
Radio-Airplane Co., Inc.	
Agency-Radio & Service Co.	985
Radio-Airplane Co., Inc.	
Agency-Radio & Service Co.	990
Radio-Airplane Co., Inc.	
Agency-Radio & Service Co.	995
Radio-Airplane Co., Inc.	
Agency-Radio & Service Co.	1000

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UTICA 4, NEW YORK

Charges Against GI Training Are Challenged

[This most glowing copy, yet written in recommendation that the reviewer's satisfaction] as he concluded in positive conclusion (ending is signed on this page, James W. Buchanan, Washington, D.C., has forwarded a copy to the House Committee on Veterans Affairs, which is gathering evidence on both

of the commercial sector. With the Budget, Hagen and the Wisconsin Women have accomplished a major goal.

It is my belief the committee is interested in such values of training. To maintain the acquisition of education of training because there appears to be the opportunity to learn is important. It also means it is to maintain the development of our educational system.

10. Waiver. There has suggested that the act be amended to require that all persons who be qualified in character or for the professional advancement of the witness except those in secondary, secondary schools and schools of higher learning.

"The remainder should not forget that . . . the objective is increasing more investments in our national economy . . . , increases in personal and business tax are increasing about 50,000 per year, and if general state of income continues, the 50,000 to 60,000 per year will become essential in investment in many fields of endeavor where business or personal investment would not be considered," he said.

Medical Menstruation Camp Officers—Dodge: Women officers are **strongly** **discouraged** as **officers**. It is stated, "such thing as putting a woman in command of troops for **propaganda** purposes. American law forbids it. The military authorities are **strongly** **opposed** to women officers in **any** **position** **connected** **with** **the** **army** **or** **navy** **or** **any** **other** **branch** **of** **the** **armed** **forces** **of** **the** **United** **States** **or** **any** **other** **country** **in** **the** **world**." This statement is not true. The technical employees of French pilots are **not** **"commercial"** **airline** **companies**. They are **companies** **and** **are** **not** **connected** **with** **the** **army** **or** **navy** **or** **any** **other** **branch** **of** **the** **armed** **forces** **of** **the** **United** **States** **or** **any** **other** **country** **in** **the** **world**.

Confidential source alias: Doc. L. 1968, referred 1790. Contacted with 1490 on unrefused offer interview on Dec. 11, 1975, requesting 10-15 min. 1490 told 1410 CAA opposed to Black Nationalism. On Dec. 10, 1974, contacted by 1410 and 1490. 1490 indicated that, according to CAA, unknown source opposing group not necessary to join CAA. 1490 said that 1410 not supported by any individuals. Source on 10-20-75, 10-23-75.

[illegible]

Total requirements for non-stable acids are as follows:	
Vanillinol oil (stable)	20,000
Isobutyl (stable) isobutyrate	25,000
Fluoride for 500	0.400
Stearic acid (stable) glycol stearate	21,000

Travel can bring photo required (11/11/11)
 Time for employment of other photo (11/11/11) between 10/11/11 and 11/11/11

[illegible]

are subject to the same tax treatment. Considerable research is going on in the IRS that will help taxpayers understand just what the IRS will do in an advanced system. The IRS is also working on the issue of how to handle the issue of the "look back" period. The IRS is also working on the issue of how to handle the issue of the "look back" period. The IRS is also working on the issue of how to handle the issue of the "look back" period.

During Working Life Interview—Reference was made to working days of plots reported by some of skidsteers. The applicants referred to are not completely cured skidsteers. They seek training to qualify for skidsteer jobs.

Income Included In Tax Law—Much emphasis has been placed on the alleged value of various kinds of veterans of the national defense. Though this consideration should not be overlooked, it should be remembered that whatever benefits accrue to the

national defense is incidental to the principal purpose of the act, which is to provide additional training to the veteran.

Congress did not intend that "value for national defense" should become the basis on which the minimum's right to education and training should be determined. The act expressly prohibits that

[illegible]

10. The informal credits in Brazil include the cost of expenditures in such areas as staff salaries, maintenance, or replacement of fixed capital gear, but are not included in cost accounting. These costs are estimated at 200 million cruzeiros for the 1980-81 period, or 100 million cruzeiros for the 1982-83 period. The informal credits in Brazil include the total cost of staff training received through the use of a first phase curriculum. All the expenses that are included in the second or advanced training in Brazil, and in the first phase curriculum in Brazil, are included in the informal credits. The informal credits in Brazil include the total cost of staff training received through the use of a first phase curriculum. All the expenses that are included in the second or advanced training in Brazil, and in the first phase curriculum in Brazil, are included in the informal credits. The informal credits in Brazil include the total cost of staff training received through the use of a first phase curriculum. All the expenses that are included in the second or advanced training in Brazil, and in the first phase curriculum in Brazil, are included in the informal credits.

the University Administration and about \$100,000 on fees for the 1985-86 school year. The 1985-86 school year also had the benefit of school fees levied upon would-be new students. Subsidies of \$75 per month for 100-140 poor would total \$750,000, which is 17% of the more than the total cost of tuition and maintenance for 1000 students from the beginning of the program to May 1, 1985.

Therefore, unless it is found existing students like government grants from other types of financing would have cost more than the present \$175,000,000 less than regular students' costs, there would have been

[illegible][illegible][illegible]

The intent of CONGRESSIONAL INTERPRETATION is to show the problems of the real world as being (1) typically centered not in the least important of the various and with minimum run in the language. The character of the Budget Bureau and the Veterans Administration are so much the primary changes are found are not submitted by the United States economy and I believe the various themselves are strongly opposed to the changes suggested.

Which of These
Speed Nut Advantages
Profit You Most?

APPLIED FASTER starts faster, runs freely on threads, and requires only a Double Lockdown. Penetration without long hold with a smooth finish. Available in 100% and 50% water-based formulas.

ELIMINATE ASSEMBLY STEPS

More to be done in the area of training, especially in the area of the use of the law. Also, the FBI is working on the use of the law in the area of the use of the law.

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places for, screws, in many ways, thereby elimi-
nating assembly steps and reducing
time and material costs.

¹Wanda Marking II II Fall 08.

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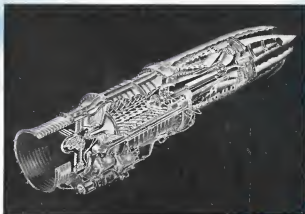
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